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SATOW, E.—Ancient Japanese rituals. *Tr. As. Soc. of Japan*, VII, ii, iv.

SCHIEFNER, PROF.—On the languages of the Caucasus. *Tr. Philol. Soc.*, 1879.

STOUT, REV. H.—Inscriptions in Shimabara and Amakusa. *Tr. of As. Soc. of Japan.* VII, iii.

TAYLOR, E. C.—Musical instruments of all ages. *Nat. Repository*, April.

## GEOLOGY AND PALÆONTOLOGY.

EXTINCT BATRACHIA.—The recent discoveries of Dr. Anton Fritsch in the Permian "gaskohle" of Bohemia,[1] have added greatly to the interest of this subject. This gentleman has discovered many specimens in an excellent state of preservation. This enables him to give details of the osteology of several types, which has been hitherto a desideratum. He refers all the *Batrachia* to the *Stegocephali*, and has, up to this time, given an account of the species of three families, for which he uses the names *Branchiosauridæ*, *Apateontidæ* and *Æstopoda*. He gives thorough accounts of the structure of a leading genus in each, of *Branchiosaurus*, *Melanerpeton* and *Dolichosoma* respectively. The specimens are so well preserved that his descriptions and figures are very instructive. He shows that *Branchiosaurus* possessed branchiæ apparently internal, and of a totally different type from those of existing gilled *Batrachia* or their extinct representative, *Cocytinus*, from the coal measures of Linton, Ohio. *Dolichosoma* was, like our *Phlegethontia*, a snake-like form, with ribs and without extremities, and with external gills. The presence of ribs distinguishes it from our *Phlegethontia*, although Dr. Fritsch thinks the present writer in error in denying them to the latter genus. He thinks he sees them in the figure of *P. serpens* in Vol. II of the Palæontology of Ohio. The marks in the position of ribs on the block there figured, were stated to represent, in all probability, traces of the longitudinal tendons so well developed in *Amphiuma*, and they furnish no ground for a belief in the presence of ribs. Dr. Fritsch describes some curious pectinate bones which he supposes to belong to the external generative organs of *Ophiderpeton*.

Dr. Wiedersheim gives[2] a very full account of the osteology of an only moderately preserved specimen of a batrachian from the Bunter sandstone (Lower Trias) of Switzerland. The structure of the pelvic and scapular arches, and of the limbs, are best given, and a cast of the cranial cavity is described. He reviews the systematic work previously done, intercalating his own results. We remark here that in one instance he takes an analytical key of genera given by Cope for a systematic classification, and very naturally criticises it adversely.

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[1] Fauna der Gaskohle und der Kalksteine der Permformation Boehmens. Prag 1878–1880.

[2] *Labyrinthodon rütimeyeri* Abh. d. Schweiz. Palæont. Gesselsch. Von. R. Wiedersheim. Zürich, 1878.

Prof. Cope, in the Proceedings of the American Philosophical Society for May, 1880 (Palæontological Bulletin, No. 32), enters into the structure of the genera *Eryops* and *Trimerorhachis*, and re-defines the sub-order *Ganocephala*, showing that it differs materially from other *Stegocephali* in the structure of the vertebral column.

The present occasion is a convenient one for a further addition to the subject, which chiefly concerns the genus *Cricotus*.[1] This remarkable form has been characterized in this journal[2] and elsewhere[3] by the complete development of its centra and intercentra, both of which form entire vertebral bodies and in pairs support single neural arches. No such character has been detected in the known divisions of the *Stegocephali*, but before establishing a new one for it, I have waited further information. Additional knowledge of its structure shows that it is the type of a distintinct division of the *Stegocephali*, which may be defined as follows:

Centra and intercentra subequally developed as vertebral bodies, a single neural arch supported by one of each, forming a double body. Chevron bones supported only by intercentra. Basioccipital vertebral articulation cup-like, connected with the first vertebra by an undivided discoid intercentrum.

Thus the peculiarity of the vertebral column in general is carried into the cephalic articulation, and we have, instead of the complex atlas of the *Ganocephala*, a single body connecting occipital condyle and first vertebra. This body represents, in all probability, the *single occipital condyle of the Reptilian skull.* This part, as is well known, remains cartilaginous in the lizard[4] long after the basioccipital is ossified, and is a distinct element. The structure of *Cricotus* shows that it is a connate intercentrum. We have now removed the last difficulty in the way of the proposition that the *Reptilia* are derivatives of the *Batrachia*, viz: the difference in the cranio-vertebral articulation. But the former have not been derived from the *Labyrinthodontia* as has been suggested, nor from the *Ganocephala*, but from the *Embolomera*, as I call the new order, or sub-order. The order of *Reptilia* which stands next to it is, of course, the *Theromorpha*, which presents so many Batrachian characters, including intercentra, as I have for the first time pointed out in the paper above quoted. Besides *Cricotus*, Fritsch describes a genus from Bohemia under the name *Diplovertebron*, which I suspect to belong to the *Embolomera*.—*E. D. Cope.*

The Genealogy of the American Rhinoceroses.—The genus *Aceratherium* has been supposed to be represented in North

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[1] Cope, Proceedings Academy, Phila., 1875, p. 403.

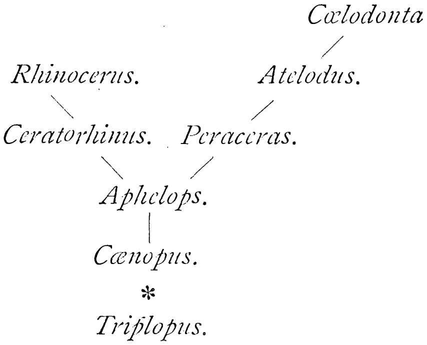
[2] 1778, p. 319, May 22,

[3] Proceed. Amer. Philos. Soc., 1878, p. 522.

[4] See Parker on the development of the skull of the Lizard, Philos. Trans., London, 1879.

America on account of the agreement of the species of the White River beds in dentition and absence of horn, with the *A. incisivum* of Europe. It seems now that none of the American species have the four digits in the manus, which is characteristic of *Accratherium*, but that that member is three-toed, as in *Aphelops*. Even in the Eocene period, the most rhinoceros-like genus, *Triplopus* (Cope, this Journal, 1880, p. 383), was already three-toed. The lower Miocene species show in their superior incisor teeth that their position is between the two genera named. *Triplopus* probably has, like *Hyrachyus*, incisors $\frac{3}{3}$; the *Rhinocerus occidentalis* of Leidy, $\frac{2}{1}$, while in *Aphelops* Cope, they are $\frac{1}{1}$. In *Peraceras* Cope (this Journal, 1880, p. 540) superior incisors are wanting,

The series of genera will then be as follows. The table only differs from the one already given in the NATURALIST (1879, p. 771*c*), by the interjection of the two new genera named. The collateral genera are omitted.



The characters of *Cœnopus* are as follows. Dentition; I. $\frac{2}{1}$; c. $\frac{0}{1}$; M. $\frac{4}{4}$; M $\frac{3}{3}$. Digits 3—3. The typical species is *C. mitis* (*Acerathcrium* Cope).—*E. D. Cope.*

HALITHERIUM CAPGRANDI.—M. Delfortrie, of Bordeaux, has been so fortunate as to obtain a nearly entire cranium of this sirenian, which was described by M. Lartet, in 1866, under the name of *Rhytiodus capgrandi.* A nearly entire skeleton was found in the Canton Labrède, dept. of Gironde, but was broken and scattered by the workmen. M. Delfortrie, after much labor, succeeded in obtaining the fragments of the skull. This valuable relic shows that the species was of considerable size, the skeleton is said to have been five meters in length. The skull is more elongate and narrowed forwards than in the other species of *Halitherium.*

A GENUS IN ANTICIPATION.—In a late number of the *Revue Scientifique*, M. Mortillet discusses the probable maker of the flints found in the Miocene deposits of Thenay, Cantal, and of a locality in Portugal. He rejects the proposition of Gaudry that the artificer was the *Dryopithecus*, because the horizon of the flints is not exactly that in which the remains of that large ape occur. He proposes the hypothesis that the problematical being was the form which has intervened between the higher apes and man. Thus far M. Mortillet's positions appear to be reasonable, provided that his flints are artificial.

M. Mortillet goes further. He names the genus to which this being is to be referred, and calls it *Anthropopithecus*. As he has not the shadow of a definition for the genus, its proposition is in violation of all rules. Had he assumed the risk of furnishing it with characters, its adoption would have been a matter of time and discovery. Moreover, the name he uses is preoccupied. He then proceeds to name the species, of which he enumerates three. His method of distinguishing these is not zoölogical; they are proposed on inference as to their differential characters, which extends to size only. The dimensions are estimated by those of the flints, one species having manufactured large implements, and another small ones. It is therefore supposed that one of the species was of large size, and another one small.

We think on such a basis, we could infer several species of *Homo* on the North American continent, and as zoölogists and palæontologists, we must decline to admit such unsubstantial visions within the Walhalla of species and genera.

IGUANODONS.—Miss Agnes Crane, in a recent letter, states that the remains of the Iguanodons recently discovered in the Wealden formation at Bernissart, near Mons, on the Belgian frontier are now in process of articulation in the workshops of the Royal Museum at Brussels. M. Dupont is engaged in preparing a second and enlarged edition of his account of their discovery. Several perfect animals of various sizes were found associated with the "remains," of crocodiles, gigantic tortoises (rivaling Miocene forms), fishes and plants. The structure of the fore and hind limbs, the skull and the tail is now well known, and proves the animal to have been very different to all previous restorations. Prof. Owen is right as regards proportions of the fore limbs and the analogies he drew from them. Prof. Cope's views in relation to the posterior extremities will receive strong confirmation, while as to the "structures known respectively as the 'horn' and the 'spur,' every one was, on the other hand, far from imagining the truth."

THE GEOLOGY AND TOPOGRAPHY OF THE CATSKILL MOUNTAINS.—Prof. Hall long since showed that the mass of the *Catskill* mountains (N. Y.) consists of nearly horizontal beds of Devonian rocks of the Chemung and Catskill epochs, which rest unconformably on the Silurians. Prof. Guyot has recently published some interesting results of his observations on the region. He has, for the first time, determined the topography of the Southern

Catskills, or Shendaken mountains. He finds that they include the highest points, the Slide mountain reaching 4205 feet above tide water, and the Panther 3828. The region is an almost unbroken forest in spite of its proximity to the great centers of population. As to structure, the beds show weak plications whose axes are parallel with those of the Allegheny system, but the mountain ranges were at right angles to the system, or from north-west to south-east. This anomaly is explained by the fact that they are results of erosion. The general level descends westwards.

## MICROSCOPY.[1]

MICROSCOPY AT THE AMERICAN ASSOCIATION.—There is reason to believe that the meeting of the American Association for the Advancement of Science, which is to convene at Boston, on the 25th of August, will be a memorable gathering, as well for its scientific and social character as for the numbers in attendance at its sessions. It is expected that the old sub-sections will be maintained, and new ones organized. The large number of distinguished scholars, at Boston and vicinity, can hardly fail to give to the sub-section of microscopy a special prominence and importance this year. Ample arrangements have been made for the convenience of this department. The Physical and Biological Laboratories of the Institute of Technology have been secured for its use; also rooms for the safe keeping of instruments, and for the giving of lectures, screen projections, &c. Communications in regard to membership, or the scientific work of the meeting, should be addressed to the present chairman of the sub section, Prof. S. A. Lattimore, Rochester, N. Y.

AMERICAN SOCIETY OF MICROSCOPISTS.—This Society will meet at Detroit; August 19, according to plans previously announced. A large meeting is expected. The proceedings of last year's meeting have been issued and distributed. A supply of extra copies were published, which can be obtained at a reasonable price, by addressing the Secretary, Dr. Henry Jameson, Indianapolis, Indiana. Instead of the medal offered last year for the best specimens illustrating some common adulteration, the donor will substitute, with consent of the winner, the superb half-inch objective now made by the Bausch and Lomb Optical Co, having nearly 100 degrees aperture and capable of resolving *P. angulata.* This is a great improvement on the original offer.

"SCIENCE"—A new weekly scientific journal is announced under this title. It is designed to have somewhat the character of the English "*Nature.*" Astronomy will be the most prominent feature, but it is proposed to give adequate room to microscopical news. The editor's address is P. O. Box 3838, New York.

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[1] This department is edited by Dr. R. H. WARD, Troy, N. Y.